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Variation of Average Annual Rainfall with Height

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Using the Rainfall Averages 1916-1950 published in M0635, the regression of average annual rainfall on height above sea level was found for 31 groups of counties.

All entries were used except for 7 stations which showed clear anomalies (5 in the Lake District and 2 in coastal situations). These had to be discarded as the number of stations in each group was not large (between 10 and 30). Three stations in N Hampshire were allocated to Berkshire, and two in NW Yorkshire allocated to N Lancashire; otherwise county boundaries were observed.

The results were as follows:-

	No of stations	Correlation Coefficient	Increase per 100ft (in)
Hertford	10	0.52	0.7
Oxford, Bucks	13	0.83	0.7
Notts., Leicester	17	0.63	0.7
Hunts., Beds., Cambs.	13	0.82	0.8
Worcs., Warw., Northants	22	0.68	0.9
Middlesex, London	13	0.76	0.9
Essex	17	0.74	1.0
Norfolk, Suffolk	15	0.45	1.1
Lincs., E.R.,	24	0.52	1.3
Gloucester	13	0.83	1.4
Sussex	16	0.63	1.5
Wiltshire, Berks	19	0.57	1.7
Hereford, Salop, Cheshire	21	0.66	1.7
N'land., Durham	18	0.80	1.7
Surrey	15	0.90	1.8
Hampshire	14	0.75	1.9
N.R.	17	0.87	2.0
Dorset	10	0.62	2.0
Kent	23	0.75	2.2
Somerset	18	0.86	2.2
Staffs., Derby	20	0.80	2.3
W.R.	28	0.81	2.4
S & Central Lancs	28	0.91	2.4
Pem., Cards., Carm.	18	0.83	2.4
Cornwall	10	0.78	2.7

	No of stations	Correlation Coefficient	Increase per 100ft (in)
Montgom., Denbigh., Flint	19	0.86	3.0
Brecon & Radnor	18	0.73	3.4
Devon	20	0.86	3.6
Glam., Monmouth	16	0.74	3.9
Cumb., Westm., N Lancs	23	0.65	5.3
Merioneth, Caerns., Anglesey	14	0.93	6.3

The regression coefficients for change with height are highly correlated (0.90) with average county rainfall (Ag Mem 61).

Coefficient = 0.096R - 1.43

Any comments or suggestions on this paper should be referred to the author.

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